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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,678	06/27/2003	Jai-Moo Yoo	69650/RSM	8273

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Cooper & Dunham LLP
1185 Avenue of Americas
New York, NY 10036

EXAMINER

WONG, EDNA

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,678

Applicant(s)

YOO ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
4a) Of the above claim(s) 6 and 7 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Election/Restrictions

Applicant's election of Group I, claims 1-5, in the reply filed on April 11, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The requirement is still deemed proper and is therefore made FINAL.

Accordingly, claims 6 and 7 are withdrawn from consideration as being directed to a non-elected invention.

Specification

The disclosure is objected to because of the following informalities:

page 2, line 3, there is no "Fig. 1(a)".

page 2, line 4, there is no "Fig. 1(b)".

page 2, line 10, there is no "Fig. 1(c)".

page 2, line 16, there is no "Fig. 1(d)".

page 11, line 25, reference character "2" has been used to designate both the cathode and the plating solution (from page 11, lines 24-25). It is unclear what reference

character "2" designates.

page 16, line 9, there is no "Fig. 6".

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claims 1-5 are objected to because of the following informalities:

Claim 1

line 2, it is suggested that the word -- an -- be inserted after the word "by".

line 4, it is suggested that the phrase -- comprising the step of -- be inserted after the word "orientation,".

line 5, it is suggested that the words "being deposited" be amended to the word -- depositing --.

line 6, it is suggested that the word -- a -- be inserted after the word "having".

Claim 2

line 2, it is suggested that the word -- an -- be inserted after the word "by".

Claim 3

line 2, it is suggested that the word -- an -- be inserted after the word "by".

Claim 4

line 2, it is suggested that the word -- an -- be inserted after the word "by".

Claim 5

line 2, it is suggested that the word -- an -- be inserted after the word "by".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

line 5, it appears that “being deposited” is the same as the deposited by electroplating process recited in claim 1, lines 2-3. However, it is unclear if it is.

line 8, it appears that the “electroplating process” is the same as that recited in claim 1, lines 2-3. However, it is unclear if it is. If it is, then it is suggested that the word - the -- be inserted after the word “using”.

lines 8-11, the phrase “such as a direct current electroplating process (DC process), a pulse current electroplating process (PC process) or a periodic reverse current plating process (PR process)” is indefinite.

Claim 3

line 6, it appears that “is deposited” is the same as the deposited by electroplating process recited in claim 1, lines 2-3. However, it is unclear if it is.

lines 6-7, “the plating solution” lacks antecedent basis.

lines 7-8, it appears that “a direct current electroplating process (DC process)” is the same as that recited in claim 1, lines 8-9. However, it is unclear if it is. If it is, then it is suggested that the word “a” be amended to the word -- the --.

Claim 4

line 6, it appears that “is deposited” is the same as the deposited by electroplating process recited in claim 1, lines 2-3. However, it is unclear if it is.

lines 6-7, “the plating solution” lacks antecedent basis.

lines 9-10, it appears that “a pulse current electroplating process (PC process)” is the same as that recited in claim 1, lines 9-10. However, it is unclear if it is. If it is, then it is suggested that the word “a” be amended to the word -- the --.

Claim 5

line 6, it appears that “is deposited” is the same as the deposited by electroplating process recited in claim 1, lines 2-3. However, it is unclear if it is.

lines 6-7, “the plating solution” lacks antecedent basis.

lines 9-10, it appears that “a periodic reverse current electroplating process (PR process)” is the same as that recited in claim 1, lines 10-11. However, it is unclear if it is. If it is, then it is suggested that the word “a” be amended to the word -- the --.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/83855 ('855).

WO '855 teaches a method for manufacturing a biaxially textured pure metal or alloy layer deposited by electroplating process on the surface of a pure metal or alloy substrate (= a process for producing a metal article coated with a metal layer having a biaxially textured surface, which process comprises electrodepositing a metal layer on a biaxially textured metal substrate) [page 3, lines 9-12],

the biaxially textured pure metal or alloy layer being deposited on the surface of the pure metal or alloy substrate using electroplating process such as a direct current electroplating process (DC process), a pulse current electroplating process (PC process) or a periodic reverse current plating process (PR process) [= from the electrodeposition] (page 7, line 30 to page 8, line 2; and pages 11-15, Examples).

The biaxially textured pure metal or alloy layer is deposited in the plating solution at a cathode current density of 3~20 A/dm² (= from 1 to 50,000 A/m²) using a direct current electroplating process (DC process) [= from the electrodeposition] (page 7, line 30 to page 8, line 2; and pages 11-15, Examples), the deposited pure metal or alloy

layer having a texture fraction (TF) of 0.97 or more on the (001) plane (*inherent*).

The method of WO '855 differs from the instant invention because WO '855 does not disclose wherein the surface of the pure metal or alloy substrate has a single-crystalline or quasi-single-crystalline orientation.

WO '855 teaches that a single crystal orientation can support the high currents required by many applications of superconductors (page 1, lines 4-13).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the surface of the pure metal or alloy substrate described by WO '855 with wherein the surface of the pure metal or alloy substrate has a single-crystalline or quasi-single-crystalline orientation because a single crystal orientation can support the high currents required by many applications of superconductors as taught by WO '855 (page 1, lines 4-13).

II. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 01/83855** ('855) as applied to claims 1 and 3 above, and further in view of **Lowenheim** ("Electroplating", © 1978, pp. 212-213).

WO '855 is as applied above and incorporated herein.

The method of WO '855 differs from the instant invention because WO '855 does not disclose wherein the biaxially textured pure metal or alloy layer is electroplated in a plating solution comprising 100~400 g/l nickel sulfate, 0~70 g/l nickel chloride, 20~80 g/l

boric acid, 0~50 g/l sodium sulfate, 0~10 g/l sodium tungstate and 0~10 g/l cobalt chloride at pH 1.5~7 and 50~80°C, as recited in claim 2.

WO '855 teaches that electrodeposition is used to deposit a metal or a mixture of metals to form a textured metal surface. For example Cr, Ni, Pd, Pt, Ru, Os, Rh, Ir, Au or Cu or mixtures thereof or silver may be electrodeposited by this method (page 3, lines 8-30). Electrodeposition takes place in any suitable solution in order to deposit the metal layer on the substrate. Such solutions will be familiar to those with knowledge of electrodeposition (page 8, lines 20-24).

Lowenheim teaches that a solution of 225-375 g/l nickel sulfate, 30-60 g/l nickel chloride, 30-40 g/l boric acid, 0 g/l sodium sulfate, 0 g/l sodium tungstate and 0 g/l cobalt chloride at pH 1.5-4.5 and 45-65°C is the Watts Nickel Bath (page 213, Table 12-14).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by WO '855 with wherein the biaxially textured pure metal or alloy layer is electroplated in a plating solution comprising 100~400 g/l nickel sulfate, 0~70 g/l nickel chloride, 20~80 g/l boric acid, 0~50 g/l sodium sulfate, 0~10 g/l sodium tungstate and 0~10 g/l cobalt chloride at pH 1.5~7 and 50~80°C because this plating solution would have been a suitable solution to electrodeposit the nickel metal layer and would have been familiar to those with knowledge of electrodeposition (as The Watts Nickel Bath) as taught by Lowenheim (page 213, Table 12-14).

III. Claim 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 01/83855** ('855) as applied to claims 1 and 3 above, and further in view of **Van Horn** ("Pulse Plating", Dynatronix, August 5, 1999, pp. 1-13).

WO '855 is as applied above and incorporated herein.

The method of WO '855 differs from the instant invention because WO '855 does not disclose the following:

a. Wherein the biaxially textured pure metal or alloy layer is deposited in the plating solution under conditions of a cathode current time of 1~100 msec and a down time of 1~100 msec using a pulse current electroplating process (PC process), the deposited pure metal or alloy layer having a texture fraction (TF) of 0.97 or more on the (001) plane, as recited in claim 4.

b. Wherein the biaxially textured pure metal or alloy layer is deposited in the plating solution under conditions of a cathode current time of 1~100 msec and an anode current time of 1~100 msec using a periodic reverse current plating process (PR process), the deposited pure metal or alloy layer having a texture fraction (TF) of 0.97 or more on the (001) plane, as recited in claim 5.

Van Horn teaches a pulse current electroplating process (PC process) [page 9, Fig. 1] and a periodic reverse current plating process (PR process) [page 10, Figure 4]. The most common advantages of pulse plating are producing fine-grained deposits; reducing the variation of thickness from one part to the next; increasing plating speeds; current efficiency is better than conventional DC plating; and reducing the need for

organic additives by 50-60% (pages 1 and 2). Typical ON times are from 0.1 to 9.9 ms and typical OFF times are from 1 to 99 ms (page 2, last paragraph).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating process described by WO '855 with wherein the biaxially textured pure metal or alloy layer is deposited in the plating solution under conditions of a cathode current time of 1~100 msec and a down time of 1~100 msec using a pulse current electroplating process (PC process); and wherein the biaxially textured pure metal or alloy layer is deposited in the plating solution under conditions of a cathode current time of 1~100 msec and an anode current time of 1~100 msec using a periodic reverse current plating process (PR process) because modulation of the applied direct current would have improved the electrodeposition process as taught by Van Horn (pages 1 and 2).

As to the deposited pure metal or alloy layer having a texture fraction (TF) of 0.97 or more on the (001) plane, similar processes can reasonably be expected to yield products which inherently have the same properties. *In re Spada* 15 USPQ 2d 1655 (CAFC 1990); *In re DeBlauwe* 222 USPQ 191; *In re Wiegand* 86 USPQ 155 (CCPA 195).

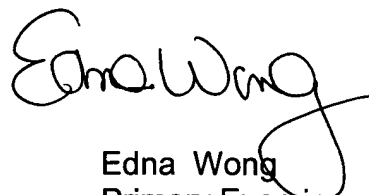
Furthermore, WO '855 and Van Horn appears to disclose a method at least in a similar manner as instantly claimed. There does not appear to be any method (step) limitations set forth in the instant claims to distinguish the instant claims from the prior art. Therefore, it would have been within one having ordinary skill in the art to expect

that a pure metal or alloy layer having a texture fraction (TF) of 0.97 or more on the (001) plane was deposited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Edna Wong
Primary Examiner
Art Unit 1753

EW
April 19, 2006